

1978

FOLIO OF THE GOODNEWS AND HAGEMEISTER ISLAND QUADRANGLES REGION

EXPLANATION

GEOLOGY GENERALIZED FROM HOARE AND COONRAD (1978)

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qu) QUATERNARY INTRUSIVE ROCKS

Lower Ordovician ? PALEOZOIC PRE-CAMBRIAN

DESCRIPTION OF MAP UNITS

Q UNCONSOLIDATED SEDIMENTARY DEPOSITS

SURFICIAL DEPOSITS

SEDIMENTARY, VOLCANIC, AND METAMORPHIC ROCKS

TOGIAK BASALT SEMICONSOLIDATED MARINE BEACH SEDIMENTS VOLCANIC ROCKS AND VOLCANOGENIC SEDIMENTS - Chiefly andesitic flows and tuffs

KUSKOKWIM GROUP - Conglomerate overlain by interbedded graywacke, siltstone, and shale; commonly micaceous; mostly marine Kb BUCHIA RIDGE GRAYWACKE - Chiefly interbedded calcareous graywacke, siltstone, and conglomerate with local coquinas of Buchia shells Kig LIMY GRIT AND LIMESTONE - Chiefly angular grit cemented by bioclastic limestone

SUMMIT ISLAND FORMATION - Nonmarine conglomerate, sandstone, shale, and carbonaceous mudstone

TUFFS AND SEDIMENTARY ROCKS - Varied assemblage of andesitic tuffs, graywacke, siltstone, impure limestone, and tuffaceous chert; tuff and tuffaceous sediments commonly laumontitized GRAYWACKE AND CONGLOMERATE - Marine graywacke, siltstone, and conglomerate; commonly calcareous VOLCANIC AND SEDIMENTARY ROCKS - Interbedded intermediate to mafic flows, tuffs, tuffaceous sedimentary rocks, and argillite; intermediate composition tuffaceous rocks commonly laumontitized

JK KULUKAK GRAYWACKE - Chiefly very hard lithic graywacke and siltstone with local conglomerate VOLCANIC AND SEDIMENTARY ROCKS - Andesitic, trachytic, and basaltic flows and breccias interbedded with volcanogenic sedimentary rocks JIVS VOLCANIC AND SEDIMENTARY ROCKS - Mafic flows and breccias interbedded with volcanogenic sedimentary rocks; fractures commonly coated with laumontite

MZPZ

MESOZOIC AND PALEOZOIC ROCKS UNDIVIDED - Widespread marine unit including mafic to intermediate volcanic rocks, tuffaceous sedimentary rocks, chert, argillite, siltstone, graywacke, conglomerate, and limestone Rvs VOLCANIC AND SEDIMENTARY ROCKS (Upper Triassic) - Locally differentiated marine unit of chert, tuffaceous cherty rocks, argillite, siltstone, wackes, conqlomerate, limestone, and mafic flows and breccia Pv VOLCANIC ROCKS (Permian) - Locally differentiated marine unit of pillow basalts, massive mafic flows, breccia, and tuff PI LIMESTONE (Permian) - Locally differentiated thin unit of marine limestone; generally tuffaceous, commonly has strong fetid odor

DOI LIMESTONE - Thin-bedded to massive limestone with minor interbedded tuff and mafic flows; locally recrystallized to marble with interbedded quartzite and quartz-chlorite schist Pzcs CALCAREOUS SCHIST (Permian or older?) KANEKTOK METAMORPHIC COMPLEX - Gneiss, schist, amphibolite, and marble; upper greenschist to lower amphibolite facies PEI MARBLEIZED LIMESTONE - Locally differentiated

Tif FELSIC INTRUSIVE ROCKS - Chiefly rhyolitic to dacitic dikes and sills; locally mapped MAFIC INTRUSIVE ROCKS - Diabase, basalt, dioritic, and gabbroic dikes and sills locally mapped NAROGARUM COMPLEX - Quartz-rich porphyritic felsite intrusive-excrusive complex of dikes, sills, tuff, and GRANITIC ROCKS - Chiefly quartz monzonite, granodiorite, and quartz diorite stocks GABBROIC ROCKS - Commonly shows compositional layering and generally associated with ultramafic rocks

ULTRAMAFIC ROCKS - Serpentinite, dunite, and websterite TRONDHJEMITE - Associated with serpentinite and gabbro METAGABBRO AND GREENSTONE - Probable dismembered ophiolite complex of mafic flows, dikes, volcanoclastic rocks, and gabbro altered by greenschist facies metamorphism and calcium metasomatism

GEOLOGIC SYMBOLS

Contact. Known, approximately located, gradational, and inferred. Most contacts between bedded rock units are probably faults Fault or fault zone. Dashed where approximately located, inferred, or concealed Thrust fault. Dashed where approximately located, inferred, or concealed. Sawteeth on upper plate -//>
Hornfels

GEOCHEMICAL SYMBOLS

RM RED MOUNTAIN ULTRAMAFIC BODY

RED MOUNTAIN CONTACT ZONE

GEOCHEMICAL SAMPLE SITES

ROCK (CLARK, GRYBECK, GREENWOOD, AND OTHERS, 1978; COONRAD, AND OTHERS, 1978)

★ CONCENTRATE (OVERSTREET, AND OTHERS, 1973)

OFFSHORE AND ONSHORE SEDIMENTS (BARNES, AND

BEACH AND STREAM SEDIMENTS (BERRYHILL, 1963) • STREAM DRAINAGE SEDIMENT (HESSIN, AND OTHERS, 1978)

 STREAM DRAINAGE SEDIMENT (CLARK, GRYBECK, HESSIN, AND OTHERS, 1978)

• STREAM DRAINAGE SEDIMENT (EAKINS, 1968, 1969)

▼ /00 NUMBER WITH SOLID ROCK SAMPLE-SITE SYMBOL REPRESENTS GEOCHEMICAL CONCENTRATION IN PARTS PER MILLION (PPM)

ABUNDANCE

 SOLID STREAM-DRAINAGE SAMPLE-SITE SYMBOL INDICATES GEOCHEMICAL ABUNDANCE OF 90TH PERCENTILE VALUE OR GREATER IN TWO OR MORE GEOCHEMICAL DETERMINATIONS AS SHOWN IN HISTOGRAMS

ABUNDANCE SYMBOLS REPRESENTING 95TH PERCENTILE OR GREATER CONCENTRATIONS DETERMINED IN STREAM-DRAINAGE SITE SAMPLES ARE SHOWN WITH

DISCUSSION OF GEOCHEMISTRY

THE TWO SHEETS COMPRISING THIS REPORT SHOW THE DISTRIBUTION AND ABUNDANCE OF COBALT AS GEOCHEMICALLY DETERMINED IN VARIOUS SAMPLE MEDIA COLLECTED FROM LOCATIONS THROUGHOUT THE GOODNEWS AND HAGE-MEISTER ISLAND QUADRANGLES REGION. SHEET 1 COVERS THE ENTIRE REGION AND SHEET 2 COVERS THE AREA OF ABUNDANT SAMPLE DATA IN THE VICINITY OF PLATINUM. SAMPLE LOCATION AND CONCENTRATION SYMBOLS ARE SIMILAR ON BOTH SHEETS. DATA PRESENTED HAVE BEEN COMPILED FROM ANALYSES AND LOCATIONS REPORTED BY BARNES AND OTHERS (1978); CLARK, GRYBECK, GREENWOOD, AND OTHERS (1978); CLARK, GRYBECK, HESSIN, AND OTHERS (1978); COONRAD AND OTHERS (1978); HESSIN AND OTHERS (1978); AND OVERSTREET AND OTHERS (1973).

THE HISTOGRAMS ON SHEET 1 HAVE BEEN USED TO IDENTIFY CONCENTRA-OUT WITHIN THE IMMEDIATE SOURCE AREA, AND SUCH VALUES ARE NOT NECESSARILY ANOMALOUS (SEE HISTOGRAM OF ROCK ANALYSES DATA FROM RED MOUNTAIN ULTRAMAFIC BODY ON SHEET 2). THE GENERALIZED

GEOLOGIC MAP DATA INCLUDED IN SHEET 1 AND THE MORE DETAILED GEOLOGIC MAP OF THE REGION (HOARE AND COONRAD, 1978) SHOULD BE UTILIZED IN CONSIDERING POSSIBLE SOURCE ROCKS FOR THE COBALT THAT

HAS BEEN DETECTED IN VARIOUS GEOCHEMICAL SAMPLES.

BACKGROUND INFORMATION RELATING TO THIS REPORT IS PUBLISHED AS U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 78-9 (AVAILABLE FROM THE SAME SOURCE AS THE MAP) This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

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